

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

- 1        1. (Original) A method of describing multiple packets to a  
2        communication apparatus with a single descriptor, the method comprising:  
3                receiving a header buffer comprising a header for each of N packets,  
4        wherein N>1;  
5                receiving a data buffer comprising a payload for each of said N packets;  
6                in a single descriptor configured to be read by the communication  
7        apparatus, storing:  
8                        a base address of said header buffer;  
9                        a base address of said data buffer;  
10                a checksum start offset indicating where to compute a checksum on  
11        each of said N packets;  
12                a checksum stuff offset indicating where to store the checksum in  
13        each of said N packets; and  
14                for each of said N packets:  
15                        a length of the payload for said packet;  
16                        a sample of the payload for said packet; and  
17                        a length of the header for said packet.
  
- 1        2. (Original) The method of claim 1, further comprising:  
2        storing in said single descriptor:  
3                a first indicator configured to indicate whether the headers for said

4           N packets are packed in said header buffer; and  
5                            a second indicator configured to indicate whether the  
6                            payloads for said N packets are packed in said data buffer.

1           3. (Original) The method of claim 1, further comprising:  
2                            storing in said single descriptor, for each of said N packets, an offset of the  
3                            packet's header within said header buffer.

1           4. (Original) The method of claim 1, further comprising:  
2                            storing in said single descriptor, for each of said N packets, an offset of the  
3                            packet's payload within said data buffer.

1           5. (Original) The method of claim 1, wherein the communication  
2                            apparatus is configured for InfiniBand, the method further comprising:  
3                            storing in said single descriptor:  
4                            an R\_key for said header buffer; and  
5                            an R\_key for said data buffer.

1           6. (Original) A computer readable medium storing instructions that,  
2                            when executed by a computer, cause the computer to perform a method of  
3                            describing multiple packets to a communication apparatus with a single  
4                            descriptor, the method comprising:  
5                            receiving a header buffer comprising a header for each of N packets,  
6                            wherein N>1;  
7                            receiving a data buffer comprising a payload for each of said N packets;  
8                            in a single descriptor configured to be read by the communication  
9                            apparatus, storing:  
10                            a base address of said header buffer;

1        7. (Currently amended) A processor-implementable method of using a  
2        single descriptor to facilitate the passing of multiple packets to a communication  
3        apparatus from a device driver, the method comprising:  
4                storing multiple packets' headers contiguously within a header buffer;  
5                storing payloads of the multiple packets contiguously within a data buffer;  
6                providing said header buffer and said data buffer to ~~a~~the device driver for  
7        ~~a~~the communication apparatus;  
8                configuring ~~a~~the single descriptor to describe the multiple packets,  
9        wherein configuring the single descriptor comprises including in the single  
10        descriptor:  
11                a base address of said header buffer;  
12                a base address of said data buffer;  
13                for each packet in the multiple packets:  
14                a length of a header of the packet; and  
15                a length of a payload of the packet;  
16                a checksum start value configured to indicate where, in each of the  
17        multiple packets, a checksum computation is to be initiated; and  
18                a checksum stuff value configured to indicate where, in each of the

19            multiple packets, a checksum computation is to be stored;  
20            configuring a second descriptor to reference said single descriptor, wherein  
21            said second descriptor is a traditional descriptor configured to describe a single  
22            packet;  
23            passing said single descriptor and the second descriptor to the  
24 communication apparatus; and  
25            at the communication apparatus, reading the second descriptor to access  
26            said single descriptor, and using said single descriptor to transmit the multiple  
27            packets.

1            8-10. (Canceled).

1            11. (Currently amended) The method of ~~claim 9~~ claim 7, wherein  
2 configuring ~~a~~the single descriptor further comprises including in the single  
3 descriptor:

4            a packed header indicator configured to indicate whether the multiple  
5 packets' headers are packed in said header buffer; and  
6            a packed data indicator configured to indicate whether the multiple  
7 packets' payloads are packed in said data buffer.

1            12. (Currently amended) The method of ~~claim 9~~ claim 7, wherein  
2 configuring ~~a~~the single descriptor further comprises including in the single  
3 descriptor:  
4            for each packet in the multiple packets, a sample of the packet's payload.

1            13. (Currently amended) A computer readable medium storing  
2 instructions that, when executed by a computer, cause the computer to perform a  
3 method of using a single descriptor to facilitate the passing of multiple packets to

4 a communication apparatus from a device driver, the method comprising:  
5       storing multiple packets' headers contiguously within a header buffer;  
6       storing payloads of the multiple packets contiguously within a data buffer;  
7       providing said header buffer and said data buffer to ~~a~~the device driver for  
8 ~~a~~the communication apparatus;  
9       configuring ~~a~~the single descriptor to describe the multiple packets,  
10 wherein configuring the single descriptor comprises including in the single  
11 descriptor:  
12       a base address of said header buffer;  
13       a base address of said data buffer;  
14       for each packet in the multiple packets:  
15        a length of a header of the packet; and  
16        a length of a payload of the packet;  
17        a checksum start value configured to indicate where, in each of the  
18 multiple packets, a checksum computation is to be initiated; and  
19        a checksum stuff value configured to indicate where, in each of the  
20 multiple packets, a checksum computation is to be stored;  
21       configuring a second descriptor to reference said single descriptor, wherein  
22 said second descriptor is a traditional descriptor configured to describe a single  
23 packet;  
24       passing said single descriptor and the second descriptor to the  
25 communication apparatus; and  
26       at the communication apparatus, reading the second descriptor to access  
27 said single descriptor, and using said single descriptor to transmit the multiple  
28 packets.

1           14. (Currently Amended)    A computer readable medium containing a  
2 data structure configured to describe multiple packets to a communication

3       apparatus for transmitting the multiple packets, the data structure comprising:  
4            a base address of a header buffer storing headers for the multiple packets;  
5            a base address of a data buffer storing payloads for the multiple packets;  
6            for each packet in the multiple packets:  
7              a length of a header of the packet; and  
8              a length of a payload of the packet;  
9              a checksum start value configured to indicate where, in each of the  
10        multiple packets, a checksum computation is to be initiated;  
11        a checksum stuff value configured to indicate where, in each of the  
12        multiple packets, a checksum computation is to be stored  
13            a first indicator configured to indicate whether the headers are stored  
14        contiguously in said header buffer; and  
15            a second indicator configured to indicate whether the payloads are stored  
16        contiguously in said data buffer.

1        15 (Canceled).

1        16. (Currently Amended)    A computer readable medium containing a  
2        data structure configured for describing multiple packets to a communication  
3        apparatus for transmitting the multiple packets, the data structure comprising:  
4            a base address of a buffer storing multiple packets;  
5            for each packet in the multiple packets,  
6              a length of the packet; and  
7              when the packets are not stored contiguously in said buffer,  
8              an offset of the packet in said buffer; and  
9            a first indicator configured to indicate whether the packets are stored  
10        contiguously in said buffer.

1 17 (Canceled).

1 18. (Currently amended) An apparatus for transmitting packets,  
2 comprising:

3 a reader module configured to read a single descriptor configured to  
4 describe multiple packets, wherein said single descriptor comprises:

5 a base address of a header buffer storing headers for the multiple  
6 packets;

7 a base address of a data buffer storing payloads for the multiple  
8 packets;

9 for each packet in the multiple packets:

10 a length of a header of the packet; and

11 a length of a payload of the packet;

12 a first indicator configured to indicate whether the headers are  
13 stored contiguously in said header buffer; and

14 a second indicator configured to indicate whether the payloads are  
15 stored contiguously in said data buffer;

16 a retrieval module configured to retrieve the multiple packets, wherein  
17 said retrieval module comprises:

18 a header retriever configured to retrieve headers for the multiple  
19 packets; and

20 a payload retriever configured to retrieve payloads for the multiple  
21 packets; and

22 a transmitter module configured to transmit the multiple packets.

1 19-21 (Canceled).

1 22. (Currently amended) A method of describing multiple packets to a

2 communication apparatus, the method comprising:  
3 for each packet, configuring a first data structure to identify:  
4 a header length; ~~and~~  
5 a payload length;  
6 a checksum start value configured to indicate where, in each of the  
7 multiple packets, a checksum computation is to be initiated;  
8 a checksum stuff value configured to indicate where, in each of the  
9 multiple packets, a checksum computation is to be stored; and  
10 a type of checksum;  
11 storing in the first data structure headers for the packets and payloads for a  
12 subset of the packets;  
13 configuring a first descriptor to identify the first data structure;  
14 configuring said first descriptor to identify a location of the headers and  
15 a location of the payloads within the first data structure;  
16 storing in a second data structure payloads for a subset of the packets;  
17 configuring a second descriptor to identify a location of the payloads  
18 within the second data structure; and  
19 forwarding said first descriptor and said second descriptor to the  
20 communication apparatus to facilitate transmission of the packets.

1 23-26 (Canceled).

1 27. (Currently amended) A computer readable medium containing data  
2 structures for facilitating transmission of multiple packets from a communication  
3 apparatus, the data structures comprising:  
4 a first metadata structure configured to include:  
5 a metadata section configured to identify, for each of the multiple  
6 packets:

- 1 28. (Original) The computer readable medium of claim 27, further
- 2 comprising:
  - 3 a second metadata structure configured to store payloads for the multiple
  - 4 packets; and
  - 5 a second descriptor configured to identify a memory location of said
  - 6 second metadata structure.

1            29. (Original) The computer readable medium of claim 27, wherein:

2    said first metadata structure is further configured to include:

3                a payload section configured to store payloads for the multiple

4                packets; and

5    said first descriptor is further configured to identify:

6                a location of said payload section within said first metadata

7                structure.

1           30 (Canceled).

1           31. (Original) The computer readable medium of claim 27, wherein:  
2    said first metadata structure is further configured to identify:  
3           a type of checksum for checksumming the multiple packets.